

CLAIMS

What is claimed is:

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5 1. In a computer system, a method saving a running software application for execution at a later time, the application being associated with a process having a state and an environment, comprising the steps of:

- (a) associating a unique identifier with a running software application to be saved;
- (b) virtualizing the process environment associated with said running software application;
- (c) recording process events that change the state of the process;
- 10 (d) saving process state in the form of a snapshot image; and
- (e) saving shared resource state relevant to said snapshot image with said snapshot image.

15 2. The method of claim 1, further including the step of saving modified memory pages relevant to said snapshot image with said snapshot image.

20 3. The method of claim 1, further including the step of saving states associated multiple threads relevant to said snapshot image.

25 4. A method of restoring to a running state a software application stored in a running state with necessary processes, process state information, memory information, and dependency information, comprising the steps of:

- (a) matching said stored software application with an application identifier;
- (b) locating all stored processes stored with said software application;
- (c) recreating global/shared state;
- (d) creating a process that inherits the global/shared state;
- (e) isolating the global/shared state process from other processes;
- (f) For each type of state stored within the stored software application, bind system state to a virtual definition if the state is virtualized, reconnect the state to any processes the state is shared
- 30 with, and place the state in synchronized wait;

- (g) removing traces and states induced; and
- (h) performing a synchronized resume of all processes.

5. A computer program product, which, when executed by a computer, saves a running software application for execution at a later time, the application being associated with a process having a state and an environment, by performing the steps of:

- (a) associating a unique identifier with a running software application to be saved;
- (b) virtualizing the process environment associated with said running software application;
- (c) recording process events that change the state of the process;
- (d) saving process state in the form of a snapshot image; and
- (e) saving shared resource state relevant to said snapshot image with said snapshot image.

6. A computer program product, which, when executed on a computer, restores to a running state a software application stored in a running state with necessary processes, process state information, memory information, and dependency information, executing the steps of:

- (a) matching said stored software application with an application identifier;
- (b) locating all stored processes stored with said software application;
- (c) recreating global/shared state;
- (d) creating a process that inherits the global/shared state;
- (e) isolating the global/shared state process from other processes;
- (f) For each type of state stored within the stored software application, bind system state to a virtual definition if the state is virtualized, reconnect the state to any processes the state is shared with, and place the state in synchronized wait;
- (g) removing traces and states induced; and
- (h) performing a synchronized resume of all processes.

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